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ABSTRACT

An important aspect of the composing process is the element of organization--the coherent development of ideas and considerations of relevance. Most investigations of this aspect have focused on prewriting behavior or on "heuristics," "frames," or other approaches that presuppose that organization is something imposed from the outside and that the composing process begins with the choice of a pattern within which individual sentences are fitted. The fields of critical thinking and applied logic suggest a wholly different perspective: logic, which treats organization, coherence, and relevance as integral features of an exposition or argument. If the logical structure of the composing process is examined, it can be seen that individual topics, theses, or sentences themselves guide the production of what follows (a premise points to a conclusion, a question dictates the sort of answer that will be considered, a claim dictates the supporting evidence to be supplied). These constraints and internal patterns can be discovered in bad reasoning as well as good, and affect both the form and the content of the written product. Failure to recognize these constraints, or general lack of attention to the internal organization governed by applied logic, can lead to a distorted or incomplete model of the composing process. (The paper contains examples from student papers to illustrate the constraints imposed by logic.) (Author/FL)

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Logical Structure and the Composing Process

Lilly-Marlene Russow

One of the most fascinating and obscure aspects of the composing process is the decision procedure which determines what to say and when to say it: how to develop a thesis, how to structure an argument, when to begin or end a paragraph, when a particular thought is relevant or not. Thus, a major concern of those who teach or do research in composition is what might be loosely called 'organization': how a composition is planned, structured, or organized. In this paper, I would like to propose a new perspective on the issue of what makes a composition organized or structured. To look at the problem from a slightly different angle, I shall consider some possible answers to the question: why should one composition turn out to be organized, coherent, well developed, while another rambles, is full of irrelevant remarks, with paragraphs and ideas starting and stopping apparently at random?

Until recently, the way to answer such questions has been to look at the composition itself, and give a critique of it. For years, students would get back essays full of cryptic comments such as 'irrelevant,' or 'doesn't follow,' together with admonitions to try to avoid these faults in their next attempt. This approach yields little insight into the positive nature of the organizing process.

Those who have more recently become disenchanted with this narrow focus on the final product, either because of pedagogical misgivings or because of its limitations in terms of research, have turned to a study of the composing process. Here, empirical data is gathered and analyzed about the steps that lead up to the production of a well or poorly organized composition. Using this approach, one might hope to discover that a disorganized essay is due,

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e.g., to the amount of time spent pre-planning, insufficient monitoring during the writing process, or the employment of an inappropriate heuristic.

Rather than evaluating these approaches (a task better left to those in other areas of expertise) I would like, with the help of an example, to sketch a third alternative.

Suppose that a student in a logic class offers the following argument: "all atheists come from somewhere other than Indiana, and anyone who dislikes Reagan lives outside of Indiana, so people who dislike Reagan must be atheists." Concerned about his reasoning skills as well as his xenophobia, I might try to discover why his argument is so bad. Paralleling the traditional method, I could simply tell the student that the middle term of his argument is not distributed, and that the argument is therefore invalid. If I look instead at the steps the student followed in preparing his argument, I might observe that he, unlike the better students, did not stop to check his argument before blurting it out; he had skipped the "check-your-argument-with-a-diagram step" that others use in the process of generating good arguments. Finally, I might observe that the mere fact that both premises mention people who live outside of Indiana does not guarantee that both are about the same group of people, and hence there is no substantive connection between the two statements.

The third sort of approach is more like the traditional answer in that it analyzes the product rather than the process, but it preserves the latter's intuition that it is important to understand why and how the thing went wrong. Here, however, the 'why' and 'how' are understood analytically, in terms of the logical structure of the whole, rather than causally, in terms of the actual steps that led to this result. The justification for this divergence is that the same result, whether good or bad, can result from any number of different procedures, while a structural flaw that renders an argument invalid is to be criticized no matter how it arises. Since our concern here is ultimately

normative--producing a good argument rather than a bad one--our investigative perspective must retain sight of those normative elements. The third approach, like the first but not the second, tries to generate an understanding of why certain considerations are important and effective. In short, the third method analyzes the logical structure which shapes the argument.

Moving back to the topic of the composing process, my thesis is that one can gain valuable insight into the nature of what I earlier called 'organization' by taking this third approach and attending to the logical structure of written work.

The element of logical structure in an essay is perhaps most easily discerned in the connections which exist between one sentence and its neighbors, or even between clauses within a sentence. Thus, when DA (see Appendix 1) observes that "since animals do feel pain. . . they should not be eaten," it is clear that the connection between the first part of the sentence and the second is inappropriate or incomplete; the logical structure of the sentence is, as it stands, one of two unrelated claims. Less obviously, the last sentence in the portion of DA's essay reproduced here, although still about meat-eating, has no structural link with the preceding argument.

To avoid misunderstanding, let me add that I am not equating logical structure with good arguments. Someone who argues that animals have an interest in avoiding pain, and that interests are a necessary condition for having a corresponding right, and concludes that animals therefore have a right not to suffer, is not arguing well (the argument is fallacious) but there is still a unifying logical structure within which those claims are appropriately grouped.

The structure within which one sentence is related to another also forms the foundation for judgments that a gap exists in the development of the composition, that something must still be filled in. The rules of logical development license, in effect, the move from one idea to another, and also fix the limits

of what can be done in a single such step. In LER's paper, for example, we are puzzled by the introduction of claims about an animal's need to "evolve" simply because she has left too much of a gap between that idea and the previously described concern for living freely in a natural environment.

When a gap such as this one appears, a discerning reader not only notices the gap, but even has a fairly precise intuition about what would be needed to bridge the gap. This is a useful tool in the attempt to make logical structures explicit, in that the reader is, in effect, assimilating and working within the logical structure which is required by what is already there. By paying attention to what the structure seems to demand (by noting similarities in what the reader uses to bridge the gap) we can extrapolate to the nature of the structure itself.

In the passage in question, the gap can be filled in in one of two ways: one can either incorporate a claim that natural evolution is an aspect of the requirement that animals should live freely, or that it is a necessary condition for "maintaining harmonious relationships." In either case, the logical structure seems to demand subsumption: 'evolving', as well as 'preservation of the natural environment,' must be related as particular instances of a more general good. The choice arises only because LER herself was not clear about what the more general good is, what more general category these particular ideas are to be subsumed under.

To my knowledge, no definitive or systematic classification of different possible logical structures has been given. However, by drawing on the resources of traditional logic, especially recent work in "applied logic" or "critical thinking," we can generate a preliminary list. On that basis, I would suggest the following types of logical structures:

1) Subsumption: grouping things together under a broader or more general category. Citing a list of examples may be a more specific form of this category,

or a closely related one.

2) Classification: developing and applying distinctions within a more general category (in the manner of old, Aristotelian definition by genus and difference).

3) Parallel sequencing: tracing of alternatives and conjuncts--including, perhaps, comparisons and contrasts.

4) Entailment chains: following a sequence in which one proposition leads or points to another.

5) Presupposition analysis: tracing an idea backwards to make explicit assumptions, concepts, and judgments which form the foundation for that idea (this may be closely related to, or simply a variant of, entailment chains).

6) Progressive refinement: making ideas ever more precise or exact, or "zeroing in" on a thesis.

This list deals with the basic, first level structures which have generally proven adequate and exhaustive in applied logic; however, further investigation may indicate the need for additional types, or a different classification. These, and possible other structures determine the organization of individual sentence, has its own logical structure which determines which parts of the paragraph support the main thesis, which develop it further, which do not properly belong there, and so on.

An examination of examples can also illustrate this logical structure as it applies to an entire paragraph. At the end of DA's first paragraph, the introduction of 'means of protest' is jarring; this suggests that it does not fit well into the appropriate logical structure of the remainder of the paragraph. Most of the paragraph illustrates the structure ealier described as "progressive refinement;" in this case, the idea that meat-eating is wrong is gradually made more precise, and given more substance. The non sequitur

mentioned earlier (animals being raised in an environment which causes pain) is unrelated to neighboring sentences, it nonetheless is easily accomodated in the overall structure of the paragraph; observations about means of protest are not.

Finally, logical structure plays an important role even at the broadest level of the composing process--dictating the content and organization of the composition as a whole. For example, questions of audience and tone are, fundamentally, concerns about what can be presupposed, what must be defined, and so on. These are considerations which affect and are affected by considerations of logical structure. Whether a writer chooses to explain, describe, define, or argue will depend on (1) the topic and the logical structures most appropriately applied to it, and (2) the writer's perception of his audience--what he expects the audience to bring to the composition by way of presuppositions, opinions, background knowledge, and other factors which must find a place within the structure of the composition. The interaction of these two factors helps determine the logical structure of the composition as a whole.

The importance of logical structure need not be limited to argumentative writing, although it is easiest to recognize there. Logical structure is responsible for a composition's being coherent or incoherent, it determines whether certain remarks are relevant or not, and it guides meaningful and appropriate development. Since these factors are essential in many different writing tasks, including narrative, descriptive, amd expository writing, it is important to consider the logical structures of such compositons, too.

All of what I have been saying about logical structure may strike some as based on little more than speculation and, perhaps, effrontery. After all, I have cited only a few examples, and have certainly not offered any empirical evidence for the claims I have advanced. My justification for

this is simple: the fact that compositions have a logical structure is a conclusion which follows directly from the observation that they can be well or poorly organized, that statements can cohere or fail to do so, and all the other common sense evaluations that apply to this topic. The question of what sorts of logical structures one can choose from is open to "empirical" investigation of a sort--i.e., careful analysis of the widest possible range of written work--but even this must be informed by an understanding of the logical concepts involved, and a theoretical consideration of which classification schemes are most useful. This independence from empirical proof can be made more plausible by filling in a few more details about the nature of a logical structure.

Empirical research can determine things like which, if any, rules a person consciously employs when engaged in a given activity: we can discover, for example, whether someone in the process of writing 'receives' employs the rule 'i before e except after c.' But this sort of research will not help with logical structure, since logical structures are not some sort of rule that a person can employ (although--and this is an empirical question--some people might employ rules which are designed to lead to the production of something with a certain logical structure). Rather, logical structures are more aptly thought of as patterns which we, looking on, can abstract from an essay, and then analyze in terms of the connections, rules, and patterns of logic. It would consequently be misguided to focus on the conscious strategy that a writer employs in order to uncover the logical structure; structure is a property of the work, not of the process which led to it.

For similar reasons, it would also be wrong to think of logical structures as something like 'heuristics' or 'plans' which a writer has internalized, and which serve (whether consciously or unconsciously) as instructions

which the writer follows while writing. For one thing, we can determine with complete accuracy the logical structure of a bit of writing even if we are completely ignorant of the procedure that was followed to produce it; indeed, any number of mutually incompatible procedures might result in compositions with the same logical structure. Secondly, a choice of heuristic or plan is essentially arbitrary from an internal perspective, although it may be influenced by such external factors as culture, training, and the writer's preferences. Logical structures afford much room for choice, but what guidance they do provide depends on the nature of the words and the thoughts they contain; it is an internal constraint, not something which is imposed on the topic or ideas. This difference between a heuristic and a logical structure can be likened to the difference between a puzzle in which the object is to assemble certain pieces into the shape of a cube, and one in which the only goal is to arrange them in a pleasing pattern. Solutions to either puzzle will exhibit some sort of order, but in the first case, the order will be dictated primarily by the constraints of the puzzle-rules and the pieces themselves; in the second case, the pattern will be the result of a procedure which consciously or unconsciously imposes an externally determined pattern. Less dogmatically, we can recognize that the distinction between internal and external constraints is better conceived of as a continuum; nonetheless, the distinction is still an important one.

Even though questions like "do compositions have a logical structure?", "how should we classify or define different sorts of logical structures?", or even "why does this composition have the logical structure it does?" are not the sort of questions to be answered by empirical methods, there are ways in which the concept of logical structures is relevant to empirical research. More particularly, it can serve both as a corrective (or at least a cautionary note) and as a positive indication of possible areas of investigation.

Considerations about logical structure can serve as a corrective simply

because they remind us of what our options are. Because they rest on the realization that the question with which I began this paper admits of more than one interpretation, they serve to make us more conscious of research designs which are based on the assumption that there is only one way of reading the question. I will limit myself to mentioning one way in which such an assumption can affect research design.

A great deal of recent work on composition has started with the goal of investigating the writing process, but has quickly translated that into an account of the activity or behavior which immediately precedes the completion of a writing task (roughly, the behavior which occurs between the time a person is assigned a writing task and the time he or she turns the composition over to the researcher). Thus, planning can easily be translated into 'pre-writing'. But this move from 'planning' to 'pre-writing' can be justified only if one assumes that the question "why did this composition turn out well/poorly organized?" is best understood as a question about the casual antecedents, the steps which were followed in producing the work, the conscious behavior of the writer. I am not claiming that this is the wrong way of understanding the question; I am claiming that the assumption must be evaluated in light of all the alternatives, and that includes logical structure. Thus, researchers must remain open, at least initially, to the possibility that such factors as planning might be illuminated by means other than for example, a protocol analysis which tells us only what the subject does and/or says.

On the positive side, considerations of logical structure do generate some possible topics for empirical research, mostly having to do with questions of how logical structures are assimilated, recognized, and incorporated. Thus, one might ask whether certain logical structures are more difficult than others (i.e., most likely to be used in an inappropriate way or incorrectly carried through). If so, can a student learn more effectively in a program that utilizes

topics and assignments that rely on the simpler logical structures before progressing to the more complicated ones? (that is: is subsumption a logical structure that is more likely to be correctly realized in a composition than entailment chains, and if so, will a student learn more when he is assigned 'descriptive' topics before 'analysis' t-pics). One might experiment with different ways of making writers attentive to the logical structure of their work, to see whether that has any effect on their competence. A third question might concern transference: does an ability to produce sentences that stand in appropriate logical relations to each other carry over to an ability to produce longer paragraphs or compositions with the equivalent logical structures? At this point, provisional analysis turns into research questions, and that seems like a good place for a philosopher to stop.

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Appendix #1

Excerpts from Student Papers

LER:

When considering what would be the right way to treat an animal one should attempt to imagine himself as that animal, and decide how he would like to be treated in the given situation. One needs to consider the biological as well as behavioral needs of that animal. As I do so, I have come to the conclusion that by allowing the animal to live freely in its natural environment we are doing it justice. To achieve this, first of all the natural environment must be preserved and second, the animals must be allowed to evlove through the selective pressures of natural selection, maintaining the harmonious relationships between species.

DA: The way most animals are raised causes them pain and suffering. Pain or being capable of feeling pain is one prerequisite for possessing rights. Since animals do feel pain and are raised in an environment which causes them pain, they should not be eaten. This is an effective means to protest factory farming.

Though the world hunger situation was only briefly discussed in this class, I feel that this is also an excellent reason not to eat meat. Eating grain-fed beef or pork or any other meat which could save a life is highly immoral. If the grain could reach the people who need it, thousands of lives could be saved. The majority of the meat eaten is poor quality, anyway. This alone is justification for condemning someone who eats meat.